DETERMINANTS ANALYSIS OF ISLAMIC AND CONVENTIONAL BANKS SYSTEMIC RISK POTENTIALITY: A PRELIMINARY STUDY

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Abstract:

This study aims to analyze the determinants of systemic risk in Islamic and conventional banks. The population of this research is Islamic and conventional banks, which are listed on the Indonesia Stock Exchange. Researchers used purposive sampling to ensure the suitability of the sample with the research objectives. Furthermore, we use secondary data obtained from financial databases such as Yahoo Finance and the Indonesia Stock Exchange. This study adopts the systemic risk measurement offered by Fiordelisi and Marquez-Ibanez (2013). The determinants of systemic risk were explored from the six independent variables, namely the bank efficiency, business model, size, interest rate, GDP, and bank categories (Islamic or conventional). Data analysis was performed with panel data regression. The results indicate that size is the critical factor in determining potential systemic risk for banks, both Islamic and conventional banks. This study contributes theoretically in constructing theoretical frameworks related to the stability and resilience of Islamic banks in comparison with conventional banks. Practically this study seeks to produce recommendations for improvement of Islamic banking financial governance as an alternative to conventional banking.

Key words: *Financial, Failure, Systemic Risk, Islamic Banking*

1. Introduction

The systemic failure of Lehman Brothers in 2008 has emphasized that the structure of bank funding was an important aspect of economic resilience (OCDE, 2010; Bourkhis and Prophet, 2013). Systemic failure occurs due to the inability of financial entities to survive liquidity pressures that make it bankrupt and the bankruptcy has the potentiality to infect other entities that are connected to each other to frustrate a financial system (Freixas, Parigi, and Rochet, 2000; Allen and Gale, 2000; Schwarcz 2008).

Interestingly, in the last three decades, the banking world has been colorized by developments in the Islamic financial system which have become an alternative in the banking system (Imam and Kangni, 2010). Islamic banking currently operates in more than 70 countries, has total assets equal to US$ 820 million at the end of 2008, and holds a market share in the range of 11%-35% (IFSB et al, 2010). The rapid development of the sharia banking system was followed by developments in research related to Islamic banking both studies that focused on theoretical studies related to the principles of muamalah and efficiency in Islamic charges (Yudistira, 2004; Hamim, Naziruddin and Syed, 2006; Abdul-Majid, Saal and Battisti , 2010), as well as empirical studies related to financial stability of Islamic banking, its resilience in dealing with market pressures, and its contribution in maintaining economic stability (Čihák and Hesse, 2010; Rajhi and Hassairi, 2013; Bourkhis and the Prophet, 2013; Chong and Liu 2008; Hasan and Liu 2008; Hasan and Dridi, 2011; Beck, Demirgüç-Kunt, and Merrouche; 2012).

The uniqueness of Islamic Banks compared to Conventional Banks, in general, is the concept of profit and loss sharing they have. The concept of Al-Shariah believes that interest is a forbidden aspect so that the concept of interest in Conventional Banks is changed to the concept of profit-sharing in accordance with muamalah law in Islam. However, the study of Chong and Liu (2009) revealed that the rapid development of Islamic banks was not only because of the profit and loss sharing concept but because of the revival of Islamic teachings that had been abandoned. This thinking was strengthened by the findings of the Financial Services Authority (OJK, 2014), which revealed that the inclusion of sharia finance in Indonesia was 8%, while sharia financial literacy was only 3%. This shows that not all users of Islamic financial products understand the concept of Islamic finance but are sure to use Islamic financial products. The conviction is certainly thought to have been born from the beliefs of the spiritual teachings that he followed.

Likewise, this view must still be empirically tested in relation to its contribution to maintaining a country's economic stability. Because the systemic failure of a financial entity can disrupt the country's economic stability and ultimately disrupt the welfare of the lives of many people. Hasan and Dridi's study (2011) indicates that Islamic banks are more resilient in facing the 2008 crisis. Meanwhile, other studies more specifically reveal that in banks with small assets, Islamic banks are more stable than conventional banks, while in banks with large assets, conventional banks are more stable than Islamic banks (Čihák and Hesse, 2010). This happens because the risk management of Islamic banks is no better than conventional banks (Hasan and Dridi, 2011; áihák and Hesse, 2010). This study is certainly even more interesting if the researcher follows up on the investigation of the determinants of the potential systemic risk of the two banks. Furthermore, this study can be the basis for developing sharia banking governance to be more competitive in the financial industry. Therefore this study aims to analyze the determinants of systemic risk in Islamic and conventional banks.

This study seeks to enrich the findings of previous studies which revealed that Islamic banks have the potential for better resilience than conventional banks. It's just that previous studies reveal some limitations of the study relating to the size of banks that are not comparable from the perspective of assets and capital as well as the maturity of financial governance. This study seeks to explore important factors that might influence the systemic failure of the two banks with the same platform so that the characteristics of the two banks are assumed to be the same except for the types of operations namely Islamic banking and conventional banking. Scientifically this study seeks to enrich the limitations of scientific studies related to the existence of Islamic banking as an alternative financial institution at this time. Practically, this study is not trying to replace the existence of conventional banks but seeks to provide scientific reasons as literacy in determining inclusion, investment, contribution, governance, and attention to Islamic banks for customers, investors, academics, governments, and other interested parties. This study seeks to produce recommendations for improving sharia banking financial governance that can be maximized by maintaining sharia bank stability.

2. Theoretical Framework

2.1. Systemic Risk

The rapid integration of financial markets has made policymakers more concerned about the occurrence of systemic risk in the banking sector (Lehar, 2005). Moreover, in the last quarter-century, there have been many banking crises throughout the world and caused banks to fall into 15-20% of GDP on average during the crisis period (Hoggarth et al., 2002).

On the other hand, the concept of systemic risk itself still has quite substantial differences among experts. The previous study indicates there are at least three major concepts related to systemic risk. First, systemic risk is considered to refer to shocks that produce almost simultaneous, significant, and detrimental effects on most or all domestic economic systems (Kaufman & Scott, 2003). Meanwhile, in the second concept, systemic risk is seen as the failure of one party to fulfill its contractual obligations, which in turn can cause the other party to fail with a chain reaction leading to broader financial difficulties. (BIS, 1994). While the latter concept focuses more on the party that will most have an impact on systemic risk with the view that the more identical the risk exposure experienced by a bank and the bank that has the potential to fail, the more likely it will experience the same failure (Kaufman & Scott, 2003). So if a bank is indicated to fail, policymakers can minimize losses by trying to evaluate their units. However, whatever definition is chosen and considered the most appropriate. This systemic risk is still a danger that must be anticipated because banks at this time have interconnected with one another in the form of savings, loans, clearing payment systems, and other financial activities that will result in the spread of failure of a financial entity.

2.2. Islamic Banking

Islamic banking is an institution that accepts deposits and runs all banking activities with the exception of interest (Al-Jarhi and Iqbal, 2001). Like conventional banking, they also act as entities that seek to maximize profits, so it needs to be emphasized that Islamic banking is not a religious institution (Imam & Kpodar, 2013). However, according to El-Gamal (2006), there are at least some fundamental differences between Islamic banking and conventional banking, for example: the prohibition of riba (interest), maysir and gharar (speculation), funding for illicit activities (prohibited by religion), and part of the bank's profits are used for zakat. These various restrictions certainly make sharia banking maneuvers be different compared to conventional banking, for example, Islamic banking cannot do hedging due to a prohibition on usury (Imam & Kpodar, 2013)

With the Islamic Sharia approach, Islamic banking implements what is called the Profit and Loss Sharing (PLS) paradigm. In Islamic Sharia, PLS is known as the principle of mudarabah (profit sharing) and musharaka (joint venture). Adherents of this principle, assume that Islamic banking is better in dealing with external shocks than conventional banking, this is because bank losses will also be borne by the customer, not only the banking itself (see Khan and Mirakhor, 1989; Iqbal, 1997). However, not all experts think so. Chong & Liu (2009) in their study, which took a sample in Malaysia, assumed that not all sharia banks apply the PLS principle strictly in its application, so this makes Islamic banking not much different from conventional banking. On the basis of these differences, researchers are interested in studying the systemic risk between conventional banking and Islamic banking.

2.3. Conceptual Framework

In the previous study, Rahmadana (2018) has indicated that financial markets in Indonesia have a tendency to make decisions that are influenced by religious content information. Demographically this seems natural because some Indonesian people are religious communities with Islamic religious beliefs. It's just from the point of view of rationality that religious reasons are not always considered right because they are not based on the scientific knowledge that is generally associated with certain financial ratios. On the one hand, Chong and Liu (2009) in their research agreed that the rise of Islam was associated with acceptance of Islamic banks. This argument is reinforced by OJK's publication which reveals that Islamic financial inclusion is at 8% which outperforms its own literacy which is at 3%. From this number, the public enthusiasm appears even with limited literacy. Although, the figure of eight 8% is actually not large enough compared to conventional financial inclusion.

However, empirical research must indeed be able to prove the existence of the Islamic bank in its contribution to economic stability. So that attention to Islamic banks can be given for rational reasons according to financial theory so that the public, in general, can review them and consider them further, not just normative arguments which for some religions are indeed rational, but for certain circles are not rational. This study is not trying to contrast the concepts of Islamic economics and western

economics but wants to review the meeting points of them so that the acceptance of Islamic banks can be diffused to various groups and ideologies. Because Islamic banking can actually be an alternative model of banking that is more stable, resistant to crises, and systemic risk so that it can contribute to maintaining economic stability. Previous studies have actually indicated this potential, only a few studies revealed the limitations of Islamic bank governance. These governance limitations result in the limited competitiveness of Islamic banks compared to conventional banks. This is thought to have implications for the inclusion of Islamic banks which only lasted at 8%. Therefore in this study, researchers sought further tests regarding 1) the potential of Islamic banks in failing; 2) the potential for transmitting failure, and 3) recovery time needed. This research actually attempts to reject the alleged failure and its potential transmission. However, if there is a potential for failure, the main causes will be explored so that recommendations can be made to improve financial governance so that the implementation of Islamic banks can be more competitive.

3. Research Methodology

3.1. Scope of Study

This study will use a sample of Islamic banks operating in Indonesia. Systemic Risk Analysis is carried out using the "Fiordelisi and Marquez-Ibanez (2013)" model which is considered parsimony and reliable to measure the potential systemic risk of financial entities.

3.2. Systemic Risk Estimation

In this study, the measurement of systemic risk (banking industry risk) and systematic (market wide risk) refers to the research of Fiordelisi and Marqués-Ibañez (2013), namely by looking at the movement of abnormal bank stock returns to the abnormal return of the banking sectoral index and the capital market index in every country. The sectoral index used to find the value of systemic risk in this study is the financial sectoral index (finance) of each country observed. Estimation is carried out through the following models:

$R_{i,c,t} = \beta * R_{m,c,t} + \gamma * R_{l,c,t} + \varepsilon_{i,t}$

Where:

$R_{i,c,t}$ = Daily Abnormal return of bank i shares in country c in period t

$R_{m,c,t}$ = Daily abnormal return on the stock market portfolio (M) in country c and period t

$R_{l,c,t}$ = Daily abnormal banking return of industry (I) in country c and period t

The systemic risk component are calculated for each bank and every year (MKTi, t), and so do systematic risk (INDit) in each bank by estimating the regression model separately each year using daily data. The number of systemic risk from a bank i will be captured from the magnitude of the β coefficient that was successfully estimated using model (1) above. The amount of systematic risk from a bank i will be captured from the magnitude of the coefficient γ in model (1). Model (1) is regressed

separately each year for each individual so that we get the time series data of systemic risk components (MKTi, t) and systematic (INDit) that exist in each bank i. With this method, the measurement of systemic risk and systematic risk of each bank can be calculated separately and can be directly linked to other individual bank data.

3.3. Estimation of Bank Default Risk

The default risk of an individual bank *(z- score$_{i,t}$)* is calculated using the following formula.

$$Z - scroe⬚i,t⬚ = ROA + E/TA⬚\sigma ROA⬚$$

According to Fiordelisi and Marqués-Ibañez (2013), default risk is measured by simplified z-score or insolvency risk based on accounting information, namely the ratio of the sum of the average return on assets and the average capital ratio (σROA) divided by the standard deviation from return on assets (óROA). The smaller the Z score, the greater the probability of default..

3.4. The Effect of Bank Default Risk on Systemic Risk

To identified whether bank default risk can affect systemic risk (banking industry risks) and systematic risk (market-wide risks) in a country. This study uses panel data regression in the following two models:

$IND_{t,c}$ = $\alpha + \beta_1 Z - score_{i,t} + \beta_2 CI_{i,t} + \beta_3 INCD_{i,t} + \beta_4 LIAD_{i,t} + \beta_5 SIZE_{i,t} + \beta_6 GGDP_{t,c} + \beta_7 INT_{t,c} + \varepsilon_{i,t}$

$MKT_{t,c}$ = $\alpha + \beta_1 Z - score_{i,t} + \beta_2 CI_{i,t} + \beta_3 INCD_{i,t} + \beta_4 LIAD_{i,t} + \beta_5 SIZE_{i,t} + \beta_6 GGDP_{t,c} + \beta_7 INT_{t,c} + \varepsilon_{i,t}$

Where:

INDt,c = Systemic risk of a bank in year t

MKTt,c = Systematic risk of a country in year t.

CI$_{i,t}$ = Level of bank efficiency (Coefficient of Efficiency)

INCDi,t = Level of income diversification of a bank which measured by the ratio
between non-interest income to total income.

LIATi,t = Level of liability diversification which measured by the ratio between
non-deposit liability to total deposits

SIZEi,t = Bank size which measured by the amount of credit extended

GGDPt,c = Economic growth

INTt,c = interest rate of central bank

4. Result and Discussion

4.1. Descriptive Statistics

This study selects a sample of the company using a purposive sampling method. The criteria of samples are 1) Banking companies listing on the Indonesia Stock Exchange; 2) Banking companies that have two categories of bank management, namely Banks with Islamic management and with conventional

management. 3) Data is taken from selected samples in the same period even though listing (IPO) at different times.

From the criteria above, the number of companies that were sampled was 6 (six) banking companies consisting of 1) PT. Bank Rakyat Indonesia; 2) PT. Bank Rakyat Indonesia Syariah; 3) PT. State Retirement Savings Bank; 4) PT. State Retirement Savings Bank; 5) PT. Bank Panin; 6) PT. Panin Sharia Bank. The available data have different time series, for example: data with daily time series for stock prices and data with quarterly time series for other data such as interest rates, GDP and data sourced from the company's financial statements. In this study, the time series that become the research unit are quarterly.

Stock price data is taken from 1 July 2018 to 30 June 2019 or 239-time series. The data is divided into four quarters with a time series of N = 62 for the first quarter, N = 62 for the second quarter, N = 61 for the third quarter, and N = 54 for the fourth quarter. The following are descriptive statistics of the six companies' stock prices that became the study sample in the four quarters of the time series that were the focus of the study.

Table 1. Descriptive Statistics of Stock Prices of Islamic Banks and Conventional Banks

		BBRI	BRIS	BTPN	BTPS	PNBN	PNBS
First Quarter (June-Sept 2018)	N	62	62	62	62	62	62
	Mean	3082.2580	592.4193	3864.3548	1619.7580	832.9838	69.7419
	SD	152.9000	28.0184	106.0872	23.3017	54.0071	3.2488
	Range	580	105	350	85	250	13
	Min	2830	555	3670	1580	730	64
	Max	3410	660	4020	1665	980	77
Second Quarter (Oct-Dec 2018)	N	62	62	62	62	62	62
	Mean	3345	546.8548	3670	1711.4516	1131.6935	57.0161
	SD	277.2508	18.7571	148.6000	60.1322	64.8513	6.0503
	Range	800	70	530	285	295	17
	Min	2910	520	3390	1595	945	50
	Max	3710	590	3920	1880	1240	67
Third Quarter (Jan-March 2019)	N	61	61	61	61	61	61
	Mean	3853.2786	545.6557	3685.5737	2040.5737	1393.2786	62.1803
	SD	112.5273	13.3064	84.5680	103.1750	161.0561	5.4114
	Range	500	65	400	360	595	22
	Min	3610	520	3500	1870	1045	50
	Max	4110	585	3900	2230	1640	72
Fourth Quarter (April-June 2019)	N	54	54	54	54	54	54
	Mean	4187.7777	522.5925	3638.8888	2622.0370	1254.4444	59.2962
	SD	202.8724	19.1010	63.2057	324.4814	60.9025	2.7856
	Range	710	70	330	1240	260	11
	Min	3750	500	3400	2210	1140	54

	Max	4460	570	3730	3450	1400	65
1st – 4th Quarter	N	239	239	239	239	239	239
	Mean	3596.9874	552.887029	3717.3640	1977.4058	1148.7029	62.1506
	SD	468.6572	32.4883916	138.2246	417.4333	230.4366	6.7027
	Range	1630	160	630	1870	910	27
	Min	2830	500	3390	1580	730	50
	Max	4460	660	4020	3450	1640	77

During one year of observation, the highest share price was achieved by Bank BRI with IDR 4,460 per share, and the lowest rate of IDR 2,830 per share. The highest stock price achievements were obtained in the fourth quarter of research observations, namely in the April-June 2019 range, while the lowest prices occurred in the first quarter of research observations, namely in the July-September 2018 range. The lowest value of Bank BRI stock prices in the fourth quarter was IDR 3,750 share shares. It means that BRI's share price has a positive trend. It was reinforced by the average value of BRI's shares during the four quarterly observations on IDR 3,596 per share with a standard deviation on IDR 468.

Furthermore, Bank Panin Syariah achieved the lowest share price with the highest rate of IDR 77 per share and the lowest rate of IDR 50 per share. The highest stock price achievement was obtained in the first quarter of research observations in the range of July-September 2018, while the lowest price occurred in the first quarter of research observations in the field of July-September 2018. The lowest value of the Panin Syariah Bank stock prices in the second and third quarters IDR 50 per share. It means that Bank Panin Syarah's share price has a volatile trend. The average value of Bank Panin Syariah shares during the four quarterly observations was IDR 62.15 per share with a standard deviation of IDR 6.7.

High stock prices do not reflect high-profit levels; on the contrary, low stock prices are also not an indicator of loss. Two things become the purpose of someone buying and selling shares on the stock exchange floor, namely: dividend (profit sharing company) and return (Difference in selling price and purchase price of shares). Therefore, stock returns are far more essential to analyze than just looking at a company's stock price. Stock returns are not only an objective in stock trading, but returns are also the data needed later to measure a company's risk and ultimately become an indicator to measure the systemic risk posed by the company. The following is a description of the six companies' stock returns that were sampled in this study both overall (one year of observation and each quarter).

Table 2. Descriptive Statistics of Stock Returns of Islamic Conventional Banks

Time		BBRI	BRIS	BTPN	BTPS	PNBN	PNBS
First Quarter (June-Sept 2018)	N	61	61	61	61	61	61
	Mean	0.001968	0.00067	-0.000826	0.000822	0.002533	-0.000916
	SD	0.0256791	0.0228494	0.0119409	0.00544	0.0200861	0.0231214
	Range	0.1336	0.1307	0.0752	0.0378	0.0958	0.1152

	Min	-0.0737	-0.0488	-0.0253	-0.0125	-0.0458	-0.0588
	Max	0.0599	0.082	0.0499	0.0253	0.05	0.0563
Second Quarter (Oct-Dec 2018)	N	62	62	62	62	62	62
	Mean	0.002572	-0.001902	-0.001259	0.001306	0.003002	-0.004551
	SD	0.0173795	0.0153307	0.0134077	0.0138461	0.0321617	0.0175533
	Range	0.0728	0.0916	0.0579	0.0743	0.193	0.141
	Min	-0.0332	-0.036	-0.0315	-0.0219	-0.048	-0.1071
	Max	0.0396	0.0556	0.0264	0.0525	0.145	0.0339
Third Quarter (Jan-March 2019)	N	61	61	61	61	61	61
	Mean	0.001959	0.000242	0.000813	0.003556	0.003718	0.003895
	SD	0.0106874	0.013319	0.011745	0.0116495	0.0291603	0.027635
	Range	0.0525	0.0733	0.0645	0.065	0.1495	0.1557
	Min	-0.0238	-0.027	-0.0217	-0.0232	-0.0701	-0.0357
	Max	0.0286	0.0463	0.0428	0.0418	0.0794	0.12
Fourth Quarter (April-June 2019)	N	54	54	54	54	54	54
	Mean	0.001207	-0.000805	0.000214	0.008694	-0.001109	-0.000665
	SD	0.0151467	0.0135693	0.015105	0.0316366	0.023266	0.0228949
	Range	0.0801	0.0735	0.0981	0.1884	0.1284	0.125
	Min	-0.0395	-0.0263	-0.0423	-0.1034	-0.0462	-0.0357
	Max	0.0406	0.0472	0.0559	0.0849	0.0823	0.0893

BRI is a bank that for the past four quarters has never experienced a negative average return despite fluctuating average returns. Another bank that has never experienced a negative average return is BTPN Syariah Bank. Even the Sharia BTPN Bank showed better performance than the BRI Bank by referring to the average return in each quarter, which is increasing even though the return indicated is still smaller than the BRI bank. In contrast, other banks during the one year of observation had experienced a negative average return.

Islamic BRI Bank experienced a negative average return in the second quarter and fourth quarter observations. BTPN experienced an average negative return in the first quarter and second quarter observations, while in the third quarter and fourth quarter, the average return had reached a positive value. Bank Panin shows the average value of negative returns in the fourth quarter of observation. Bank Panin Syariah shows positive returns only in the third quarter of observations while in other quarters shows an average negative return.

Tabel 3. Comparison of Islamic Bank and Conventional Banks Returns

Time	Observations	t	df	Sig. (2-tailed)
First Quarter (June-Sept 2018)	BBRI - BRIS	1.866	237	0.063
	BTPN - BTPS	-2.751	237	0.006**
	PNBN - PNBS	1.349	237	0.179
Second Quarter (Oct-Dec 2018)	BBRI - BRIS	0.376	60	0.708
	BTPN - BTPS	-1.232	60	0.223

	PNBN - PNBS	1.055	60	0.296
Third Quarter (Jan-March 2019)	BBRI - BRIS	2.000	61	0.050*
	BTPN - BTPS	-1.194	61	0.237
	PNBN - PNBS	1.716	61	0.091
Fourth Quarter (April-June 2019)	BBRI - BRIS	0.886	60	0.379
	BTPN - BTPS	-1.213	60	0.230
	PNBN - PNBS	-0.038	60	0.969
1st – 4th Quarter	BBRI - BRIS	0.844	53	0.402
	BTPN - BTPS	-1.873	53	0.067
	PNBN - PNBS	-0.128	53	0.898

Note: * significant at alpha 5%, ** significant at alpha 1%

Significant return differences occur between BTPN Conventional and BTPN Sharia, where the average return of BTPN Sharia is greater than the BTPN Conventional at a significant level of 99% and alpha 1%. Whereas the two other banks show no average difference in return between BRI Bank and BRI Bank Syariah and no absence of average return difference between Panin Bank and Panin Syariah Bank. If we observed on quarterly average return data, in addition to the BTPN Sharia, which shows a significant difference from the BTPN Conventional. The average return of BRI Conventional also shows a significant difference with the average return of BRI Sharia, where the average return of BRI Conventional is greater than the average return of BRI Sharia. This difference is shown at a significant level of 95% and alpha 5%.

If the level of significance is setted up to 90% with an alpha level of 10%, in the first quarter there was a difference in the average stock returns between BRI Conventional and BRI Sharia where the average return of BRI Conventional is greater than the average return of BRI Sharia. In addition, the difference in average return is also shown by Panin Conventional and Panin Sharia, where the average Panin Bank return is greater than the average return of Panin Sharia. This happened in the second quarter. In the fourth quarter, the difference in the average return also occurred between BTPN Conventional and BTPN sharia where the average return of BTPN sharia was greater than the average return of BTPN Conventional.

Table 4. Comparison of Islamic and Conventional Bank Returns with Market Returns

Time	Observations	t	df	Sig. (2-tailed)
First Quarter (June-Sept 2018)	BBRI - IHSG	1.763	237	0.079
	BRIS - IHSG	-0.916	237	0.361
	BTPN - IHSG	-0.767	237	0.444
	BTPS - IHSG	2.426	237	0.016*
	PNBN - IHSG	0.965	237	0.336
	PNBS - IHSG	-0.710	237	0.478
Second Quarter (Oct-Dec 2018)	BBRI - IHSG	0.545	60	0.587
	BRIS - IHSG	-0.014	60	0.989

	BTPN - IHSG	-0.771	60	0.444
	BTPS - IHSG	0.079	60	0.937
	PNBN - IHSG	0.653	60	0.516
	PNBS - IHSG	-0.644	60	0.522
Third Quarter (Jan-March 2019)	BBRI - IHSG	1.253	61	0.215
	BRIS - IHSG	-1.373	61	0.175
	BTPN - IHSG	-1.053	61	0.297
	BTPS - IHSG	0.429	61	0.669
	PNBN - IHSG	0.563	61	0.575
	PNBS - IHSG	-2.111	61	0.039*
Fourth Quarter (April-June 2019)	BBRI - IHSG	1.062	60	0.292
	BRIS - IHSG	-0.298	60	0.767
	BTPN - IHSG	0.046	60	0.964
	BTPS - IHSG	1.912	60	0.061
	PNBN - IHSG	0.810	60	0.421
	PNBS - IHSG	0.868	60	0.389
1st – 4th Quarter	BBRI - IHSG	0.998	53	0.323
	BRIS - IHSG	-0.317	53	0.753
	BTPN - IHSG	0.218	53	0.829
	BTPS - IHSG	2.022	53	0.048*
	PNBN - IHSG	-0.299	53	0.766
	PNBS - IHSG	-0.133	53	0.894

Note: * significant at alpha 5%, ** significant at alpha 1%

BTPN Sharia has a significantly different return from the market return, which is represented by a composite stock price index (CSPI) at a significant level of 95% where the average return obtained by BTPN Sharia is higher than the market return. BRI Conventional also has an average return higher than market returns, but only at a significant level of 90%, while other banks do not have differences in return with market returns.

In the first quarter of observation, not one bank showed a significant difference in average returns from market returns. However, the significance of individual returns with new market returns occurred in the second quarter, namely between Panin Sharia and market returns at a significant level of 95%. However, what is shown is that the average market return is higher than the average return of Panin Sharia. In the third and fourth quarters, BTPN Sharia showed a significantly different average return with an average market return at 90% in the third quarter and 95% in the fourth quarter, while other banks did not show an average return, which is different from market returns.

4.2. Figure of Systemic Risk

In this study, the measurement of systemic risk (banking industry risk) and systematic (market-wide risk) refers to the research of Fiordelisi and Marqués-Ibañez (2013), namely by looking at the movement of abnormal bank stock returns to the

abnormal return of the banking sectoral index and the capital market index in every country. For each bank, every quarter, the systemic risk component (MKTi, t) and systematic (INDit) are calculated at each bank by estimating the regression model separately each year using daily data. The amount of systemic risk from a bank i will be captured from the magnitude of the coefficient, which has been successfully estimated using the model described in Chapter III. The amount of systematic risk from a bank i will be captured from the magnitude of the coefficients on the model. The model is revised separately every quarter for each bank so that we get the time series data on systemic risk components (MKTi, t) and systematic (INDit) that exist for each bank i. With this method, the measurement of systemic risk and systematic risk of each bank can be calculated separately and can be directly linked to other individual bank data. The table 5 below is the results of the Bank's systemic risk estimation, which is the sample of this study.

Table 5. The Figure of Systemic Risk of Islamic and Conventional Banks

	BBRI	BRIS	BTPN	BTPS	PNBN	PNBS
First Quarter (June-Sept 2018)	0.352	0.226	0.113	0.566	0.073	0.259
Second Quarter (Oct-Dec 2018)	0.378	0.222	0.169	0.284	0.000	0.023
Third Quarter (Jan-March 2019)	0.315	0.150	-0.084	0.154	0.035	-0.005
Fourth Quarter (April-June 2019)	0.401	0.302	0.050	0.006	0.187	0.145

From the observations and estimates above, it can be seen that the BRI Bank beta coefficient shows a consistent value and does not have significant fluctuations, which means the market return and individual return of Bank BRI have the same direction and with a constant value. The market return correlates with BNI Conventional return. It indicates that BRI Conventional has the potential to provide a systemic risk to the market, as well as BRI Sharia. In contrast to BTPN Conventional and Panin Sharia, which showed a very volatile beta value even in the third quarter, both banks had negative beta coefficients. These two banks do not indicate any potential systemic risk that will arise from the condition of the Bank, nor does Panin Conventional also shows fluctuating beta values, although it never shows a negative beta value. An exciting finding was demonstrated by BTPN Sharia which in the first quarter showed a high beta coefficient value, which indicated that the bank could trigger systemic risk, but in the following quarters it showed a declining beta value which showed the opposite indication, which was increasingly not showing would have a systemic risk impact on banks in Indonesia.

4.3. Systemic Risk Model

This study using several factors to determine the factors which may affect banks' systemic risk. The first factor is the level of efficiency of each bank, where banks that are relatively inefficient will tend to have an aggressive risk-taking profile in order to achieve certain profit targets. The default risk of a bank like this will tend to be large and simultaneously influence its relationship with systemic risk and systematic

risk (Fiordelisi et al., 2011). The second factor is the bank's business model, namely how the bank earns revenue and how its funding strategy. The bank's business model is thought to influence the risk of bank defaults and at the same time influence the effect of defaults on the banking system and also the capital market (Bertrand and Schoar, 2003). The bank's business model can be seen from income diversification (as measured by the ratio between non-interest income and total income) and liability diversification (as measured by the ratio between non-deposit liability to total deposits). Such measurements have also been used by Baele et al. (2011), Lepetit et al. (2008), and Fiordelisi et al. (2011). The third factor is bank size. The greater the size of the bank, the greater its influence on the financial system and the wider economy, especially if interconnection between banks is very tight and the economy still relies more on bank credit. Therefore, the size of the bank should be suspected to have a strong influence on the relationship between bank default risk and systemic risk and systematic risk. And, the fourth factor is the macroeconomic factor. Some banking literature uses macroeconomic variables to capture the business environment conditions faced by banks. Annual GDP growth can be used to reflect the business cycle (Salas and Saurina, 2003, Yildirim and Philippatos, 2007), the inflation rate is used to capture monetary policy which is believed to greatly influence banking behavior in managing interest rate risk and at the same time its impact on banking risk (Borio and Zhu, 2008).

According to the previous studies, this study uses these four factors as determinants of systemic risk. Daily financial data from each sample is formulated to produce ratio data related to bank efficiency, bank business models, bank size, and GDP plus interest rates and types of banks, namely conventional and sharia banks, which are transformed into dummy variables. The six independent variables are then regressed to the systemic risk potential data from each sample. The results of the regression analysis can be reviewed in table 6 below.

Table 6. Systemic Risk Model

Model 1: SR = c + CI + ICND + Size + GDP + INT + Dummy + e						
	B	SE	t	Sig	TL	VIF
(Constant)	-7.250	4.205	-1.724	0.103		
CI	0.086	0.072	1.193	0.249	0.655	1.526
ICND	-0.318	0.757	-0.420	0.680	0.555	1.801
SIZE	2.825E-013	0.000	3.540	0.003**	0.423	2.361
GDP	0.072	0.037	1.973	0.065	0.067	14.947
INT	1.045	0.618	1.692	0.109	0.068	14.639
Dummy	0.208	0.063	3.298	0.004**	0.543	1.840
R^2= 0,478 DW= 2,362 F-value= 4,512 Sig= 0,007**						
Model 2: SR = c + CI + ICND + Size + GDP + Dummy + e						
	B	SE	t	Sig	TL	VIF
(Constant)	-0.137	0.137	-0.999	0.331		
CI	0.080	0.075	1.061	0.303	0.657	1.523
ICND	-0.768	0.745	-1.031	0.316	0.633	1.579

SIZE	3.125E-013	0.000	3.824	0.001**	0.446	2.245
GDP	0.012	0.010	1.235	0.233	0.976	1.025
Dummy	-0.137	0.137	-0.999	0.331	0.546	1.831

R^2= 0,424
DW= 2,032
F-value= 4,388
Sig= 0,009**

Model3: SR = c + CI + ICND + Size + INT + Dummy + e

	B	SE	t	Sig	TL	VIF
(Constant)	0.762	1.176	0.648	0.525		
CI	0.078	0.077	1.007	0.328	0.657	1.521
ICND	-0.880	0.756	-1.164	0.259	0.647	1.546
SIZE	3.191E-013	0.000	3.816	0.001**	0.448	2.234
INT	0.216	0.068	3.194	0.005**	0.997	1.003
Dummy	0.762	1.176	0.648	0.525	0.546	1.832

R^2= 0,526
DW= 1,979
F-value= 3,994
Sig= 0,013**

Note: * significant at alpha 5%, ** significant at alpha 1%

In the first test of the model it was found that the model violates the multicollinearity assumption on GDP and interest rate variables and found the significance of the effect on the variable size on systemic risk with p-value = 0.003 (alpha <0.05), the influence of the bank type variable (dummy) on the systemic risk with p-value = 0.004, and the effect of GDP on systemic risk with alpha <0.1. However, because it does not meet the multicollinearity assumption, the model cannot be used, so the researchers then tested the second and third models which did not include one of the variables between GDP and INT into one of the models. In the second model, the INT variable is dropped from the model. While in the third model, the GDP variable is dropped from the model. The results of testing both the second and third models can be observed in table 6 in row 14 and row 26. The results show that there are no more multicollinearity symptoms in both the second and third models, so the model can be interpreted. The second model shows that only variable size significantly influences the potential systemic risk of banking, entities both Islamic and conventional banks with p-value = 0.001 (alpha <0.05). Interestingly, the third model that replaced the GDP variable with INT also showed that only the size variable showed a significant effect on potential systemic risk with p-value = 0.001 (alpha <0.05). However, differences in types of bank entities (Dummy) do not show a significant effect on potential systemic risk in both models. Thus, the characteristics of the two banks do not show differences in the level of potential systemic risk of a bank. This result is certainly interesting in the phenomenon of the financial stability of the two banks. These results indicate that the key factor influencing a bank's potential systemic failure is its size. While the form of banks, both Islamic and conventional, is not able to explain the potential systemic failures that can be produced by a bank. Discussions related to this phenomenon and its contribution to developing research will be discussed in the next section.

5. Conclussion

This study found that size is the only independent variable that influences bank's potential systemic risk from the six variables offered, namely CI, ICND, Size, GDP, Interest Rate, and Type of Bank (Dummy). This finding is interesting because bank size has indeed become an essential indicator in measuring the potential systemic risk of banking entities. While the Type of Bank in the spotlight in this test has not shown a significant effect, this finding is in line with the results of the study of Čihák and Hesse (2010), which indicate that banks with small assets are indeed more stable than banks with significant assets. On the other hand, this study has not been able to strengthen the indication of Hasan and Dridi (2011), which revealed that Islamic banks are more stable than conventional banks. In the first model, the dummy variable showed a significant effect, but the pattern did not continue in the second and third model testing. However, as also expressed by Hasan and Dridi (2011) and Čihák and Hesse (2010), the limitations of Islamic banks are thought to occur due to the limited strength of risk management in Islamic banks.

But on the other hand, the phenomenon in this study might also occur due to the limited data available so that it is not captured comprehensively. However, the results of this study certainly pose a challenge for further studies to further explore the determinants of a systemic failure of a bank, both sharia and conventional, with more complete data variations both for time and sample variations. Further studies can also target aspects of governance that need to be highlighted to what extent it can control the risk of systemic bank failures.

Referring to the views of Chong and Liu (2009) related to the development of Islamic banks associated with the development of Islamic thought, this finding is certainly a reason for Islamic banking researchers to review aspects of Islamic bank governance further. Because the development of Islamic banks should be supported by strong management. So that it can be a reliable alternative in addressing the high risk of systemic failure from conventional banks. If the results of the study show the same level of risk between the two banks, then the presence of Islamic banks has not been able to answer the concerns of economic collapse due to the failure of the banking system.

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